UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,977	04/13/2004	Christopher J. Diorio	6928P001	5328

8791 7590 05/03/2006

BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER	
YANG, CLARA I	

ART UNIT	PAPER NUMBER
2612	

DATE MAILED: 05/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/823,977	DIORIO ET AL.	
	Examiner	Art Unit	
	Clara Yang	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 7 and 11 are objected to because of the following informalities: The claim 7 calls for a backscatter rate applicable to "the first radio-frequency signal," and claim 11 calls for providing a command signal as to control modulation "of the first radio-frequency signal." Because "the first radio-frequency signal" lacks antecedent basis, the examiner suggests changing the phrase to "the transmitted radio-frequency signal," as called for in claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 33 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. First of all, claim 33 calls for a "machine-readable medium storing a description of a circuit." The recitation of "machine-readable medium," which differs from "computer-readable medium," fails to determine whether or not the subject matter is statutory. Secondly, descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs that impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The *New IEEE Standard Dictionary of Electrical and Electronics Terms 308* (5th ed. 1993).) "Nonfunctional descriptive material" includes compilation or mere arrangement of data. Because claim 33's

description of a circuit lacks data structures or computer programs that impart functionality when employed as a computer component, the examiner considers "machine-readable medium storing a description of a circuit" to be nonfunctional description material. When nonfunctional descriptive material is recorded on some computer-readable medium, in a computer or on an electromagnetic carrier signal, it is not statutory since no requisite functionality is present to satisfy the practical application requirement. Merely claiming nonfunctional descriptive material, i.e., abstract ideas, stored in a computer-readable medium, in a computer, on an electromagnetic carrier signal does not make it statutory. In addition, a "machine-readable medium storing a description of a circuit" does not constitute a statutory process, machine, manufacture or composition of matter.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2-14, 16, 17-29, 31, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Beigel et al. (US 6,249,212).

Referring to claims 1, 16, and 31, Beigel teaches a universal electronic identification tag that is a radio frequency identification (RFID) tag (see Col. 1, lines 5-35). As called for in claims 1 and 31's first limitation, Beigel's universal tag includes a memory that stores data specifying frequencies to be generated by clock generator 7's oscillator (see Col. 4, lines 16-21 and Col. 6, lines 32-41). The memory must be (a) a non-volatile memory since it is able to store different

frequencies required to emulate new tags even when the tag is no longer powered (see Col. 3, lines 59-64; Col. 4, lines 1-6 and 16-21; Col. 6, lines 38-41; and Col. 7, lines 53-63). Regarding claims 1 and 31's second limitation and claim 16's first and second limitations, Beigel discloses that the universal tag comprises (b) a voltage-controlled oscillator (VCO) 203 that receives a frequency value (i.e., a calibration value) from the non-volatile memory, which is included in the VCO, and generates an oscillation frequency signal using the received frequency value (see Figs. 1 and 4; Col. 3, lines 59-63; Col. 4, lines 16-21 and 32-47; and Col. 6, lines 32-41). Regarding claims 1, 16, and 31's third limitation and claim 33's second limitation, Beigel's universal tag also has (c) microprocessor 13 that generates a command signal based on command data demodulated from the radio frequency (RF) signal (i.e., a second RF signal) received from a reader (see Fig. 1; Col. 3, lines 59-63; Col. 4, lines 32-47; Col. 6, lines 19-23 and 66-67; Col. 7, lines 1-2; Col. 12, lines 63-67; and Col. 13, lines 1-4). As for claims 1, 16, and 31's last limitation, Beigel's universal tag has a modulator 11 (see Fig. 1; Col. 3, lines 28-32; Col. 4, lines 48-52; and Col. 6, lines 63-65). Per Beigel, the universal tag transmits data to a reader by generating a modulated carrier via modulator 11, wherein the modulated carrier (i.e., a first RF signal) produces a separate alternating magnetic field that is superimposed on the alternating magnetic field produced by the reader's RF carrier (i.e., a second RF signal) (see Col. 1, lines 53-60). In other words, the universal tag's modulator is used to backscatter modulate the universal tag's data onto a reader's continuous wave signal in accordance with a frequency value stored in the frequency memory and with microprocessor 13's command signal (see Col. 1, lines 53-60; Col. 3, lines 28-32 and 59-63; Col. 4, lines 18-21 and 32-54; Col. 6, lines 32-41 and 63-67; Col. 7, lines 1-2; Col. 12, lines 63-67; and Col. 13, lines 1-4).

Regarding claims 2, 17, and 32, Beigel teaches that the universal tag's VCO includes a memory for storing frequencies to emulate tags of different designs that use different frequencies, wherein a reader sends the frequency values to the universal tag, causing the universal tag to store the values in (i.e., write the calibration values to) the frequency memory (see Col. 3, lines 59-63; Col. 5, lines 32-55; Col. 6, lines 38-41; Col. 12, lines 63-67; and Col. 13, lines 1-4); thus a received frequency value is associated with a write command such that microprocessor 13 writes the received frequency value to the frequency memory, which is a non-volatile memory as explained in the previous rejection of claims 1, 16, and 31.

Regarding claims 4 and 19, per Beigel, a reader can change the universal tag's emulation process by modulating its carrier with an EEPROM reprogram command together with a new emulation program, thereby causing the universal tag to replace the tag emulation program stored in EEPROM 33 with the new emulation program (see Col. 12, lines 63-67 and Col. 13, lines 1-4); hence the reprogram command also functions as a write command. The reader can also add new frequency values to the universal tag's frequency memory (see Col. 6, lines 38-41). Likewise, the reader's signal containing additional frequency values also functions as a write command.

Regarding claims 5 and 20, Beigel discloses that universal tag's oscillation frequency signal comprises a clock signal recovered from a reader's RF signal (see Col. 6, lines 28-41).

Regarding claims 6 and 21, as explained in the previous rejection of claims 4 and 19, a reader can change the emulation process of Beigel's universal tag by modulating the reader's carrier with an EEPROM reprogram command (i.e., command data) together with a new emulation program, thereby causing the universal tag to replace the tag emulation program stored in EEPROM 33 with the new emulation program (see Col. 12, lines 63-67 and Col. 13,

lines 1-4); thus command data is included within a protocol communication received, which is received at the universal tag and comprises the EEPROM reprogram command and a new emulation program.

Regarding claims 7 and 22, Beigel teaches that when the universal tag is emulating a tag that uses FSK to backscatter data to a reader, the universal tag's microprocessor 13 commands waveform generator 301 to select clock frequency f(C), which is the bit-timing clock signal used to determine the period for each bit (i.e., the backscatter rate applicable to the universal tag's RF transmission signal) (see Col. 8, lines 34-42 and Col. 12, lines 31-35); thus, a tag emulation program (i.e., command data) provided by a reader must specify a bit-timing clock signal such that the universal tag is able to emulate a particular tag using FSK modulation (see Col. 12, lines 63-67 and Col. 13, lines 1-4).

Regarding claims 8 and 23, Beigel's universal tag, as shown in Fig. 1, includes demodulator 5 that demodulates the RF signal received from a reader, extracts command data therefrom, and communicates the command data to microprocessor 13, which includes a command decoder in order to execute the received command (see Col. 4, lines 26-31; Col. 6, lines 17-27; Col. 12, lines 63-67; and Col. 13, lines 1-4).

Regarding claims 9 and 24, Beigel's microprocessor 13 must include a state machine for generating command signals based on command data received from a reader because the universal tag has a plurality of states: (1) an initialization state in which microprocessor 13 initializes upon receiving a first alerting signal (see Col. 8, lines 26-29); (2) an interrogation response state in which the microprocessor 13 responds to a reader's interrogation signal by transmitting the tag identity (see Col. 2, lines 59-64 and Col. 3, lines 2-11); and (3) a program state in which a microprocessor 13 causes EEPROM programmer 35 to reprogram EEPROM 33

with new data (see Col. 3, lines 59-63; Col. 4, lines 43-47; Col. 6, lines 38-41; Col. 12, lines 63-67; and Col. 13, lines 1-4).

Regarding claims 10 and 25, when the universal tag is programmed to modulate data onto its carrier using frequency shift keying (FSK), Beigel teaches that microprocessor 13 commands modulator 11's waveform generator 301 to select three clock frequencies with frequencies f(A), f(B), and f(C) from those available from clock generator 7 (see Col. 8, lines 34-42). Because Beigel's microprocessor 13 (1) causes each waveform generator 301, 303, and 305 to select clock signals from those supplied by clock generator 7 having specified frequencies, phases, and amplitudes and (2) controls the operations of all units of the universal tag (see Col. 6, lines 28-41 and 66-67; Col. 7, lines 1-2; and Col. 12, lines 15-20), Beigel's microprocessor 13 must provide a command signal to clock generator 7 to specify a specific frequency as to control the frequencies f(A), f(B), and f(C) provided to modulator 11's waveform generator 301.

Regarding claims 11 and 26, Beigel teaches that microprocessor 13 commands modulator 11's waveform generator 301 to select three clock frequencies with frequencies f(A), f(B), and f(C) from those available from clock generator 7 when the universal tag is programmed to modulate data onto its carrier (i.e., the first RF signal) using FSK (see Col. 8, lines 34-42 and Col. 12, lines 15-20).

Regarding claims 12 and 27, Beigel's microprocessor 13 must select a frequency value (i.e., calibration value) from the frequencies stored in the non-volatile memory, wherein clock generator's VCO 203 receives the selected frequency value because (1) Beigel's universal tag includes a non-volatile memory that stores data specifying frequencies to be generated by clock generator 7's oscillator (see Col. 4, lines 16-21 and Col. 6, lines 32-41), and (2) Beigel's microprocessor 13 provides a command signal specifying a specific frequency to clock generator

7 as to control the frequencies f(A), f(B), and f(C) provided to modulator 11's waveform generator 301, as explained in the rejection of claims 10 and 25.

Regarding claims 13 and 28, Beigel's universal tag stores a frequency value in the non-volatile memory in response to a programming operation via a reader (see Col. 6, lines 38-41; Col. 12, lines 63-67; and Col. 13, lines 1-4).

Regarding claims 14 and 29, Beigel's programming operation includes providing a command and an associated update value to the universal tag, wherein the command causes the universal tag to store the associated update value (such as a new frequency value or a new tag emulator process) in the non-volatile memory (see Col. 6, lines 38-41; Col. 12, lines 63-67; and Col. 13, lines 1-4).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 3, 15, 18 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beigel et al. (US 6,249,212) as applied to claims 1 and 16 above, and further in view of Beauvillier et al. (US 6,104,291).

Regarding claims 3 and 18, Beigel omits teaching supplying a test signal containing a write command to the universal tag's integrated circuit. Likewise, Beigel omits teaching that the programming operation is performed as part of a test operation with respect to the universal tag's circuit as called for in claim 15 and 30.

In an analogous art, Beauvillier teaches a method and apparatus for testing RFID tags. Beauvillier's RFID tags include those having at least (a) a non-volatile memory (see Col. 1, lines 34-36 and Col. 4, lines 19-27), (b) controller for responding to command signals received from a testing apparatus (see Col. 7, lines 5-10; Col. 9, lines 20-25; and Col. 10, lines 13-18 and 56-61), and (c) a modulator for providing a return signal via modulated backscatter (see Col. 4, lines 19-20). All 5 embodiments of Beauvillier's RFID testing apparatus generate an RF field to activate an RFID tag so that various commands and the RFID tag's functions are tested and information such as programming and identification information is written to the RFID tag (see Col. 7, lines 5-10; Col. 9, lines 20-25; and Col. 10, lines 13-18 and 56-61). In other words, during Beauvillier's RFID tag testing (i.e., test operation), Beauvillier's testing apparatus supplies a test signal containing a write command in order to write programming and identification information is written to the RFID tag being tested (as called for in claims 3 and 18) and performs the programming operation as part of the test operation (as called for in claims 15 and 30).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Beigel's universal tag as taught by Beauvillier because writing data to a universal tag (i.e., supplying a write command via a test signal to an RFID tag)

and programming the universal tag during field testing (i.e., a test operation) improve the universal tag's reliability by verifying correct assembly of the universal tag's components and prevent distribution of improperly functioning universal tags (see Col. 1, lines 41-58 and Col. 4, lines 9-14).

8. Claims 33-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beigel et al. (US 6,249,212) in view of Segal (US 6,496,972).

Regarding claims 33-38, as explained in the previous rejection of claim 1, Beigel's universal tag includes all the limitations called for in claim 33. Beigel, however, is silent on a machine-readable medium storing a description of universal tag's circuit (as called for in claim 33), wherein the description comprises (1) a behavioral level description of the circuit (as called for in claim 34 that is compatible with a VHSIC Hardware Description Language (VHDL) format (as called for in claim 35) or with a Verilog format (as called for in claim 36), (2) a register transfer level netlist (as called for in claim 37), or (3) a transistor level netlist (as called for in claim 38).

In an analogous art, Horan teaches a physical circuit that is stored on machine-readable media associated with a design tool used for designing semiconductor devices (as called for in claim 33), such as a netlist formatted in the VHDL language (as called for in claim 35) or Verilog language (as called for in claim 36) (see Col. 5, lines 47-56). Per Horan, netlist examples include a behavioral level netlist (as called for in claim 34), a register transfer level (RTL) netlist (as called for in claim 37), or a transistor level netlist (as called for in claim 38) (see Col. 5, lines 56-58).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Beigel's universal tag such that a description of its circuit is

stored on a machine-readable medium as taught Horan because storing a description of Beigel's universal tag on a machine-readable medium, wherein the description includes a behavioral level netlist (as called for in claim 34), a register transfer level (RTL) netlist (as called for in claim 37), or a transistor level netlist (as called for in claim 38) and is compatible with a VHDL format (as called for in claim 35) or a Verilog format (as claim 36), enables the circuit design to be used in a simulation environment to perform the universal tag's functions (see Horan, Col. 5, lines 60-63).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Mays et al. (US 2001/004361) teach RF tags that are able to communicate transmit signals at 2 or more frequencies.
- Carrender et al. (US 6,745,008) teach a multi-frequency RFID tag that includes a variable frequency oscillator coupled to a microprocessor, which is remotely controlled by a reader to control the variable frequency oscillator.
- Shanks et al. (US 6,784,813) teach a reader that remotely calibrates RFID tags' oscillation frequencies.
- Bridgelall (US 2005/0052279) teaches an RFID tag that has a non-volatile memory and an RFID reader that transmits a command to the RFID tag, causing the RFID tag to generate a backscatter signal based on the command received from the RFID reader. The command, per Bridgelall, causes the RFID tag to set its backscatter modulation signal to a specific frequency.

⌘⌘⌘

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clara Yang whose telephone number is (571) 272-3062. The examiner can normally be reached on 9:00 AM - 7:30 PM, Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CY
1 May 2006

WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600